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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/705,661 | 11/03/2000 | Kazuto Okazaki | 4296-123 | 6250 |

7590

04/19/2006

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EXAMINER

NECKEL, ALEXA DOROSHENK

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|--------------------------|-------------------------------|--------------------------------|--|
| Interview Summary | Application No. 09/705,661 | Applicant(s) OKAZAKI ET AL. | |
| | Examiner Alexa D. Neckel | Art Unit 1764 | |

All participants (applicant, applicant's representative, PTO personnel):

- (1) Alexa D. Neckel. (3) _____
 (2) Diane Dunn McKay. (4) _____

Date of Interview: 17 April 2006.

Type: a) ☒ Telephonic b) ☐ Video Conference
 c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
 If Yes, brief description: _____

Claim(s) discussed: proposed claims 8, 9 and 14 (see attached).

Identification of prior art discussed: art of record.

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Attorney McKay presented proposed claim amendments and arguments (attached) which specifically address the limitation of means for supplying a liquid coolant. The examiner indicated that in order for weight to be given to the material being supplied, the claims would need to recite "a source of" the specific material. The examiner also indicated that the recitation of pressures continue to be operational conditions not given weight in an apparatus claim.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.


 ALEXA DOROSHENK NECKEL
 PRIMARY EXAMINER

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

 Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

DRAFT

Docket No. 4296-123 US

The undersigned certifies that this communication is being deposited with the United States Postal Service as prepaid first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 12, 2006.

Diane Dunn McKay

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
OKAZAKI et al.

Serial No. 09/705,661

Filed: November 3, 2000

Title: METHOD FOR PRODUCTION OF
ACRYLIC ACID AND APPARATUS FOR
PRODUCTION OF ACRYLIC ACID

: Customer No.
: 26817
:
: Group Art Unit: 1764
:
: Examiner: NECKEL, Alexa D.
:
: Confirmation No. 6250
:
: X

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action dated January 1, 2006, please amend the above-identified application as follows:

Serial No. 09/705,661

Docket No. 4296-123 US

Amendments to the Claims:**Listing of Claims:**

1. (Canceled).
2. (Canceled).
3. (Canceled).
4. (Canceled).
5. (Canceled).
6. (Canceled).
7. (Canceled).
8. (Currently amended) An apparatus for production of acrylic acid or acrolein having a catalytic gas phase oxidation reactor, comprising:
 - a) an evaporator for gasifying liquefied propylene and/or propane as raw material of acrylic acid or acrolein,
 - b) means for supplying a liquid coolant in the range of 0 to 50° C to said evaporator,
 - c) means for chilling the coolant in the range of -10 to 40° C in the evaporator by recovering latent heat of the liquefied propylene and/or propane,
 - d) means for subjecting resultant gasified propylene and/or propane to said catalytic gas phase oxidation reactor thereby preparing a gas containing acrylic acid or acrolein, and
 - e) means for circulating coolant from the evaporator to heat exchangers, which are attached to the apparatus, said heat exchangers being at least one member selected from the group consisting of an absorbing solvent cooler and a circulation cooler attached to the acrylic acid absorbing column, a condenser attached to the solvent separating column, and a condenser attached to the acrylic acid refining column; and
 - f) means for adjusting pressure of the evaporator for gasifying liquefied propylene and/or propane in the range of about 0.2 to about 2 ~~MPa~~ Mpa-in gauge pressure.
9. (Previously presented) An apparatus according to claim 8, wherein said means for chilling the coolant includes means for adjusting a temperature of said liquid coolant or means for adjusting a flow amount thereof.
10. (Canceled).
11. (Canceled).

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12. (Canceled).
13. (Canceled).
14. (Previously presented) An apparatus for production of acrylic acid or acrolein having a catalytic gas phase oxidation reactor, comprising:
 - a) an evaporator for gasifying liquefied propylene and/or propane,
 - b) means for supplying a liquid coolant to said evaporator,
 - c) means for chilling the coolant in the evaporator by recovering latent heat of the liquefied propylene and/or propane, wherein said means for chilling the coolant includes means for adjusting a temperature of said liquid coolant or means for adjusting a flow amount thereof,
 - d) means for subjecting resultant gasified propylene and/or propane to a catalytic gas phase oxidation reaction thereby preparing a gas containing acrylic acid or acrolein, and
 - e) means for circulating coolant from the evaporator to heat exchangers, which are attached to the apparatus, said heat exchangers being at least one member selected from the group consisting of an absorbing solvent cooler and a circulation cooler attached to the acrylic acid absorbing column, a condenser attached to the solvent separating column, and a condenser attached to the acrylic acid refining column.

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REMARKS

The Office Action dated January 1, 2006 has been carefully considered. Claims 8, 9, and 14 are in this application.

The previously presented claims 8, 9, 14 and 15 were rejected under 35 U.S.C. § 103 as obvious in view of previously cited admitted prior art shown in Fig. 1 and as described on page 1, line 15 through page 5 line 29 of the present specification in combination with U.S. Patent No. 4,769,998 to Oswalt et al. Applicants submit that the teachings of these references do not teach or suggest the invention defined by the present claims.

According to the admitted prior art, as shown on page 3, lines 19-25, steam (gas) is supplied to an evaporator to gasify liquefied propylene by using its high energy. By this heat exchange, steam is condensed into warm water, which is only re-used for generating steam. In this case, the temperature of the warm water formed by heat exchange is too high to be used as coolant for a heat exchanger used in the production of acrylic acid, unlike the present invention.

Further, as shown on page 3, line 26 to page 4, line 12 the admitted prior art has various disadvantages. In particular, since steam has unduly high energy, even a slight change of steam pressure or amount of supplied steam can change the amount of propylene gasified, decreasing stability for production of acrylic acid using the propylene gas.

In contrast, according to the present invention, a liquid coolant is supplied to an evaporator for gasifying liquefied propylene. Since the liquid coolant has lower energy than steam, the total system for producing acrylic acid can be substantially stabilized as compared to the admitted prior art using steam. By this stabilization of the system, the present invention provides the advantage that the polymerization of acrylic acid can be prevented. As described in the present specification, an apparatus for producing acrylic acid can be operated stably without any suspension (see Examples 1 and 2).

Further, according to the present invention, the coolant which has been cooled with latent heat generated by the gasification of liquefied propylene can be circulated in various heat exchangers required for producing acrylic acid. This feature provides the advantages of being more economical in terms of mass production as described in the comparison between Examples and Comparative Examples in the present invention.

Oswalt et al. or Applicants' admitted prior art do not teach or suggest that a liquid coolant is used for gasifying liquefied propylene as defined by the present claims. Rather, in the apparatus of

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the admitted prior art, although there is provided the means for adjusting pressure 24, the evaporator 3 is heated by the steam 17. Further, Oswalt et al. do not teach or suggest chilling a coolant by recovering latent heat of the liquefied propylene and/or propane. Furthermore, there is no teaching or suggestion in the combination of the Applicants' admitted prior art or Oswalt et al. that latent heat of the liquefied propylene and/or propane can be used for chilling a coolant. In addition, there is no teaching or suggestion in the combination of the Applicants' admitted prior art or Oswalt et al. of means for adjusting pressure of the evaporator for gasifying liquefied propylene and/or propane in the range of about 0.2 to about 2 MPa in gauge pressure. Accordingly, the invention defined by the present claims is not obvious in view of Applicants' admitted prior art in combination with Oswalt et al.

In view of the foregoing, Applicants submit that all pending claims are in condition for allowance and request that all claims be allowed. The Examiner is invited to contact the undersigned should she believe that this would expedite prosecution of this application. It is believed that no fee is required. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,

Dated: April 12, 2006

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Attorney for Applicant

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